

REMARKS

Claims 4, 14, 15, 17 and 18 are hereby cancelled. New claims 19 and 20 have been added.

Claim Rejections - 35 USC § 112

Claims 3-18 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The office action states what constitutes an "image capture unit" cannot be clearly ascertained.

Independent claims 14 and 18 are now canceled and new claims 19 and 20 are presented. New claims 19 and 20 recite corresponding structure comprising the claimed element "image capture unit" such that one of ordinary skill in the art could easily ascertain what constitutes an image capture unit in the context of the claims as a whole. Specifically the claimed image capture unit comprises a set of image detecting elements (for example set of detectors 12 illustrated in Fig. 1 and described in applicant's original specification on page 1 lines 18-23, for example charge coupled devices (CCDs) and an image capture array (for example array 10 illustrated in Fig. 1 and described in applicant's original specification on page 1 lines 18-23.

The definiteness requirement of § 112, ¶2 focuses on whether the claims, as interpreted in view of the written description, adequately perform their function of notifying the public of the scope of the patentee's right to exclude. Further, an indefinite analysis is conducted in light of the claim taken as a whole.

Applicant submits the term "image capture unit" read in light of the corresponding structure recited in the claims themselves, and read

in light of applicant's specification, while considering the claim as a whole, reasonably apprises those skilled in the art of the scope of the invention claimed in claim 19. Section § 112 second paragraph demands no more than this.

Therefore applicant respectfully requests the rejection be reversed because term "image capture unit" recited in new claims 19 and 20 can be easily understood by one of ordinary skill in the art and the scope of protection of the claims, taken as a whole, is readily ascertainable by one of ordinary skill in the art.

Claim Rejections - 35 USC § 103

Claims 3-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Woodgate 6377295 and Inoguchi 6061179 in view of Spruck 5978143, Zeiss DE 296120540, Sugihara et al IEICIE, and Sugihara et al SID.

Applicant is unable to determine from the examiner's analysis what the examiner considers, with respect to each cited reference, the required motivation for combining or modifying each reference with the teaching of another to arrive at applicant's claimed invention.

Adding to the applicant's confusion is the reference to Gulick Jr. in the text of the examiner's analysis when Gulick Jr. was not cited as a reference in the rejection itself.

In an attempt to clarify the issues, applicant will discuss Gulick Jr. in addition each of the other cited references.

Gulick Jr.

The examiner's analysis states: "...it would have been obvious to one of ordinary skill, in the device of Gulick Jr, to employ the relative movement details as claimed for the benefit of enabling user movement and/or to keep accommodation and vergence to the same distance for better user comfort."

First, the problem of keeping accomodation and vergence (convergence?) to the same distance for better user comfort is not a problem addressed by applicant's invention. Nor is it a problem addressed by the invention of Gulick Jr.

Consequently, applicant asserts the office has failed to meet its burden to establish a prima facie case of obviousness for applicant's claims because no credible motivation to modify Gulick Jr., or to combine Gulick Jr. with any other cited reference was cited as a basis for the rejection.

Further, there is no disclosure or suggestion in Gulick Jr. to provide an array spaced from the display of Gulick. Nor is there any suggestion that the distance between any array and the display of Gulick Jr. could be adjusted.

Assuming arguendo, the lenticular lens sheet 12 disclosed by Gulick is interpreted as an "array", and the paper substrate 18 as a "display", Gulick teaches against spacing the lens sheet 12 from the paper substrate 18. To the contrary, Gulick describes "each set of ...image lines is overlayed by an aligned lenticular lens 12..of a lenticular lens sheet 14, in a manner known for constructing lenticular images displaying motion."

The evidence on record, and common knowledge of this art, recognizes the lenticular lens sheet 12 would be fixedly bound to the substrate 14 in devices of the type described by Gulick. Evidence is provided by the supporting reference cited in the Gulick disclosure, e.g. US patent 5,278,608 to Taylor, et al (cited in Gulick at col. 3 line 37-38.) The cited patent states the following: "Integral photography refers to the composition of the overall image as an integration of a large number of small photograph image components. Each photographic image component is viewed through a separate small lens usually formed as a part of a mosaic of identical spherically-curved surfaces **embossed or otherwise formed on the front surface of a plastic sheet. The plastic sheet is subsequently bonded to or held in**

close contact with the emulsion layer containing the photographic image components."

Therefore, assuming arguendo Gulick teaches a combination of a display and an array by teaching a paper substrate coated with a plastic sheet, the teaching is a **teaching away** from applicant's claimed invention. This is because applicant's claims recite an array spaced from the display, and the distance between the array and the display is adjustable.

For that reason, applicant respectfully submits the disclosure of Gulick Jr. is not applicable to applicant's invention.

Inoguchi

Inoguchi addresses the problem of how to select between displaying 2 dimensional and 3 dimensional images. In particular, Inoguchi addresses the problem of how to prevent the resolution of an image display means from lowering when switching from displaying a 2-D image signal to displaying a 3-D image signal. (See Inoguchi, col 1 lines 7-11, col 1 lines 34 - 39). Therefore Inoguchi teaches against moving an array [e.g., the lenticular lens 7] until and unless it is desired to switch from a 2-D display to a 3-D display or vice versa. Therefore Inoguchi **teaches away** from moving the array (lenticular lens 7) while still displaying a 3-D object to a viewer.

Inoguchi's teaching contradicts applicant's claimed feature: "user operable control for adjusting the distance of said 3-D reproduced object from said viewer by adjusting said second distance."

Further Inoguchi lacks any disclosure that the device should be arranged such that the position of a reproduced object corresponds to the position of the object when the first distance [distance between the capturing array and the set of image detectors] is equal to the second distance [distance between the display array and the set of light transmissive elements].

Simply moving the array of Inoguchi, regardless of direction of movement, would not be assured to have the result of "adjusting the distance of said 3-D reproduced object from said viewer by adjusting said second distance", a feature of applicant's claims.

Woodgate

Woodgate addresses the "observer-tracker" problem. This is a problem associated with some 3-D displays that operate by displaying spatially multiplexed left and right images in cooperation with a parallax device to form left and right viewing windows for the left and right eyes of the viewer. The problem is how to adjust the parallax device to provide the viewing windows for the left and right eyes when the viewer moves. The solution described by Woodgate is an observer tracker to track the position of an observer relative to the display in order to move the parallax element in accordance with the observer movement. (See Woodgate col 6 lines 31-44.)

Woodgate lacks any description of any means that would allow an observer to change the apparent distance of a 3-D displayed object from the observer.

Further Woodgate lacks any disclosure or suggestion that the device should be arranged such that the position of a 3-D reproduced object corresponds to the position of the object when the first distance [distance between the capturing array and the set of image detectors] is equal to the second distance [distance between the display array and the set of light transmissive elements].

Simply moving the parallax optic disclosed by Woodgate, regardless of direction of movement, would not likely result in "adjusting the distance of said 3-D reproduced object from said viewer by adjusting said second distance."

Further Woodgate lacks any disclosure or suggestion to provide a **light source** arranged with respect to said set of light transmitting

pixels to pass light first through said set of light transmitting pixels and then through said second array to provide a 3-D reproduced image of said object to a viewer.

Zeiss

Zeiss addresses the same problem as Woodgate, that is, how to maintain a stereoscopic display when the observer moves. (See Zeiss abstract) The reference discloses tracking that allows the user to move in front of the display while maintaining optimal stereoscopic view of the images. A head tracker automatically detects the position of the viewer's head and feeds the information to the display. This is done by moving the lenticular plate which is in front a display according to the movement of the viewer.

Zeiss lacks any disclosure or suggestion to provide a **light source** arranged with respect to a set of light transmitting pixels to pass light first through said set of light transmitting pixels and then through said second array to provide a 3-D reproduced image of said object to a viewer.

Zeiss lacks any disclosure or suggestion that the device should be arranged such that the position of a 3-D reproduced object corresponds to the position of the object when the first distance [distance between the capturing array and the set of image detectors] is equal to the second distance [distance between the display array and the set of light transmissive elements].

Simply moving the array 2 of Zeiss, regardless of direction of movement, would not be likely to result in "adjusting the distance of said 3-D reproduced object from said viewer by adjusting said second distance."

Sugihara

Both articles by Sugihara address the problem of assessing visual fatigue associated with viewing certain types

of 3-D display systems. (See Sugihara page 1815 paragraph 3.1.) Sugihara proposes a fatigue assessment methodology for use in conjunction with a fatigue assessment display system adapted to provide a compensation function for accommodation distance. (See Sugihara summary).

Sugihara lacks any teaching of an array. Sugihara teaches to employ a relay lens, specifically a monolithic block of lens and prism (See Sugihara 32.4 Fig. 5 and description paragraph 3.2) in combination with an eyepiece lens to locate a virtual image at a distance that is equal to the convergence distance. Such lens are heavy and cumbersome.

Sugihara lacks any disclosure or suggestion that the device should be arranged such that the position of a 3-D reproduced object corresponds to the position of the object when the first distance [distance between the capturing array and the set of image detectors] is equal to the second distance [distance between the display array and the set of light transmissive elements].

Sugihara lacks any disclosure or suggestion of a **light source** arranged with respect to said set of light transmitting pixels to pass light first through said set of light transmitting pixels and then through said second array to provide a 3-D reproduced image of said object to a viewer.

Sugihara does not suggest employing an array. Furthermore, mere substitution of an array for the lens of Sugihara, and moving the array with respect to the display of Sugihara would not necessarily result in "adjusting the distance of said 3-D reproduced object from said viewer...,"

Summary

In summary, when determining the difference between the claimed invention and the prior art, the invention must be considered "as a whole," that is, in its entirety rather than

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piecemeal. The difference is not determined by making an element by element comparison between the claims and the prior art, but rather by examining the claimed subject matter as a whole to determine whether, in light of the prior art, it would have been obvious to one skilled in the art.


Therefore, it can be seen that applicant's invention, when taken as a whole, is not taught or suggested by any of the cited prior art references, nor by any combination thereof.

Accordingly, Applicants respectfully request the withdrawal of the rejections under 35 U.S.C. 112, second paragraph and 103(a) and allowance of the claims as amended herein.

Applicant invites the Examiner to call the undersigned if it is believed that a telephonic interview would clarify any issues raised herein.

Respectfully submitted,

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Christine Johnson
Registration No. 38,507
609-734-6892

Patent Operation
Thomson Licensing, Inc.
P. O. Box 5312
Princeton, NJ 08543-5312